

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-20. (canceled)

21. (new) Irradiation device, comprising  
a gantry;

said gantry comprising an inner gantry part and an outer gantry part;

a radiation head, mechanically supported by said inner gantry part and rotatable around a rotation axis;

said radiation head being arranged to direct radiation to a treatment volume situated substantially on said rotation axis;

wherein all movable parts of said gantry are, in all situations, situated at a distance from said rotation axis larger than a predetermined value.;

said inner gantry part being rotatably supported by said outer gantry part at two support locations, situated on opposite sides of said treatment volume in a direction parallel to said axis.

22. (new) Irradiation device according to claim 21, wherein said gantry (1-2) is arranged substantially radially with

respect to said treatment volume (12), as defined by said rotation axis (9).

23. (new) Irradiation device according to claim 21, wherein said radiation head (8) is continuously rotatable around said rotation axis (9).

24. (new) Irradiation device according to claim 21, wherein said radiation head (8) is movable along at least one arc of a circle, substantially centered at said treatment volume (12), said arc being non-parallel with said rotation of said radiation head (8) around said rotation axis (9), whereby non-coplanar irradiation treatment is achievable.

25. (new) Irradiation device according to claim 21, wherein said inner gantry part (1) comprises a substantially circularly shaped portion (4, 5; 201; 301) arranged around said rotation axis (9).

26. (new) Irradiation device according to claim 21, wherein said inner gantry part (1) comprises a first ring portion (4) and a second ring portion (5) separated in the direction of the rotation axis (9), said ring portions (4, 5) being carried in a first support portion (6) and a second support portion (7) of said outer gantry part (2), respectively.

27. (new) Irradiation device according to claim 26, wherein at least one of the pairs of said ring portions (4, 5)

and said support portions (6, 7) comprises electrical connections with sliding contacts.

28. (new) Irradiation device according to claim 26, wherein said inner gantry part (1) further comprises a circle arc portion (3), on which said radiation head (8) is movably supported, whereby the center of curvature of said arc portion (3) is situated in said treatment volume (12).

29. (new) Irradiation device according to claim 26, wherein said inner gantry part (1) further comprises a linear beam portion (17), on which said radiation head (8) is movably supported.

30. (new) Irradiation device according to claim 29, wherein said radiation head (8) is tiltably supported by said linear beam portion (17), said radiation head (8) directing its radiation towards said treatment volume (12) from any position relative to said linear beam portion (17).

31. (new) Irradiation device according to claim 21, further comprising means for numerical control of movable parts in said irradiation device.

32. (new) Irradiation device according to claim 21, wherein said irradiation device further comprises a body-supporting couch (10), comprising two couch support portions (20, 21), situated on each side of said treatment volume (12), in the direction of said rotation axis (9).

33. (new) Irradiation device according to claim 32, wherein said body-supporting couch (10) is formed in two rigid parts (22, 23), each one attached to a respective one of said couch support portions (20, 21), said rigid parts (22, 23) being interconnected by material (24) with a low radiation cross section.

34. (new) Irradiation device according to claim 33, wherein said couch support portions (20, 21) are movable independently of each other.

35. (new) Irradiation device according to claim 34, wherein said couch support portions (20, 21) are movable in two translational directions, substantially perpendicular to said rotation axis (9).

36. (new) Irradiation device according to claim 32, wherein said body-supporting couch (10) is arranged within a distance of said predetermined value from said rotation axis (9).

37. (new) Irradiation device according to claim 21, further comprising a body-supporting couch (10) that is elongated in the direction of said axis (9).

38. (new) Irradiation device according to claim 37, wherein said body-supporting couch (10) is disposed below said axis (9).

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39. (new) Irradiation device according to claim 37,  
wherein said elongated body-supporting couch (10) has a  
lengthwise extent disposed parallel to said axis (9).

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AMENDMENTS TO THE DRAWINGS:

Replace Figs. 1, 11 and 12 with the accompanying new  
Figs. 1, 11 and 12.